RESTORE NATIVE ECOSYSTEMS ALTERNATIVE

Introduction

The Restore Native Ecosystems Alternative addresses the BLM's stated purpose for its Environmental Impact Statement on *Vegetation Treatments, Watersheds and Wildlife Habitats on Public Lands Administered by the Bureau of Land Management in the Western United States, Including Alaska*: to provide "a comprehensive cumulative analysis of the variety of vegetation treatments BLM employs for the conservation and restoration of vegetation communities, watersheds and wildlife habitats that are designed to protect people, sustain natural resources and provide for long-term multiple uses."

It is widely held by the scientific community and exhaustively documented in the scientific literature and in public agency documents that solely killing weeds cannot restore ecosystems that are vulnerable to invasion by aggressive exotic species. Likewise, natural fire regimes cannot be restored by logging and "controlled" fires only, in the absence of plans that change fire suppression, livestock grazing, and other practices that continue to produce disturbed fire regimes. In other words, we cannot simply pull bodies out as they float down a river, drowning; we need to walk upstream to see why so many bodies are entering the stream.

Thus, the Restore Native Ecosystems Alternative places the killing of unwanted vegetation within the ecologically essential context of (a) prevention of the conditions that have favored the introduction, establishment, and spread of invasive species or other vegetation problems; and (b) restoration of healthy forests and grasslands, thereby (c) reducing the need for continued treatments. Thus, in this broader sense, <u>prevention, treatments, conservation, and restoration are all "vegetation treatments."</u> Prevention, treatment, conservation, and restoration are how we ultimately must treat vegetation if we hope to restore ecosystem resilience and functions, enhance diminished native plant and wildlife populations, and provide for future generations of visitors to BLM lands.

All goals, standards, objectives, and guidelines within the Restore Native Ecosystems Alternative are, to the best of our knowledge and experience, ecologically beneficial, economically and technically feasible, reasonable, positive, supported by science, and measurable for public accountability.

The Restore Native Ecosystems Alternative is a cohesive alternative, because native vegetation, wildlife habitat, and watersheds cannot be restored without integration of prevention of conditions that favor vegetation problems, treatment of vegetation problems, and restoration of conditions that favor native vegetation on treated sites. Therefore, it is not reasonable to analyze portions of the Restore Native Ecosystem Alternative for their stand-alone efficacy. The Restore Native Ecosystem Alternative needs to be analyzed as a whole, alongside the BLM's other alternatives.

RESTORE NATIVE ECOSYSTEMS ALTERNATIVE

Vegetation Treatments, Watersheds and Wildlife Habitats on Public Lands Administered by the Bureau of Land Management in the Western United States, Including Alaska Draft Environmental Impact Statement

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RESTORE NATIVE ECOSYSTEMS ALTERNATIVE: OVERVIEW

GOAL

Ecological integrity of BLM lands will be enhanced by restoring natural processes, native species, ecosystem function, and resiliency of plant and animal communities (Overview Note 1). Ecological integrity is the ability of an ecosystem to support and maintain a balanced, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of natural habitats within the region.

Objective: Proportionality

Allocate roughly equal proportion of effort and commitments (e.g., funding, staff time) to:

1. Prevention of conditions that favor vegetation problems.
2. Treatment of vegetation problems.
3. Restoration of ecological integrity on sites that have been treated (Overview Note 2).

Objective: Best science

Base the restoration of native ecosystems on the best available science and knowledge.

Standard

Provide documentation of cases where previous application of proposed restoration activity has resulted in achievement of restoration goals. Assess the likelihood of activities contributing to long-term ecological integrity.

Standard

If treatment has not previously been attempted, cite scientific evidence that the treatment could be expected to achieve its goals.

Objective: Accountability

State goals, objectives, standards and guidelines in clear, measurable terms, then measure the outcomes of restoration activities, so that activities and users can be held accountable to the goals.

Objective: Caution

Perform restoration carefully and with humility, recognizing that ecosystems are complex and our understanding of them and the consequences of our activities are limited.

Objective: Assessment and Monitoring

In budgets and plans, include realistic and dedicated funding for, and an institutional commitment to, assessment, monitoring and appropriate response to monitoring results

and new information. Design assessment and monitoring systems and have them in place before activities commence.

Objective: Public Participation

Encourage and facilitate public participation by local, regional and national stakeholders in such activities as assessment, monitoring, early detection of invading species, provision of new and scientific information, review of assessment and monitoring protocols, and selection of alternatives for actions.

Objective: Incentives

Provide clear and significant incentives for prevention of vegetation problems and restoration of ecological integrity. Develop disincentives for activities that encourage vegetation problems and delay recovery of ecological integrity.

Objective: Economics

Ensure that restoration activities are financially accountable to the public, by relying on best available restoration and conservation science, providing "best value" for ecological integrity, avoiding treatments of symptoms that are likely to recur, and using local community workforces whenever feasible.

Overview Notes

1. Vegetation (and thus ecosystem) problems on BLM lands in sixteen western U.S. states include fragmentation; simplified ecosystems; invasive exotic species; altered fire regimes; compacted and otherwise heavily-disturbed soils; and impaired watersheds, with disturbed upland and riparian systems.

2. Because preventing future loss of ecosystem functioning and integrity is as important as remedying past negative trends, prevention should always be addressed alongside conservation and restoration. Management strategies will be grounded in a scientific approach that considers the full range of prevention, conservation, and restoration opportunities that are available.

CHAPTER 2
DEFINITIONS OF TERMS USED IN THIS ALTERNATIVE

Active restoration	Intervention to restore ecological integrity.
Conservation	Protection of landscape, ecological, and native genetic diversity and the processes that maintain them.
Ecological integrity	The ability of an ecosystem to support and maintain a balanced, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of natural habitats within the region.
Goals	Goals are concise statements that describe a desired condition to be achieved sometime in the future. Goal statements are the principal basis from which objectives are developed.
Invasive Species	Exotic species shown by observation and/or scientific evidence to aggressively expand their occupancy of land, whether or not they are viewed as directly impacting economic activities, or have been listed on formal "noxious weed" lists. "Invasive species" does not include native species that increase in response to particular human activities (e.g., juniper, mesquite, sagebrush).
Objectives	Objectives describe the incremental progress expected to take place over a period of time to meet goals (desired conditions).
Passive restoration	Suspension of activities that cause the loss of ecological integrity or native species population.
Prevention	Detecting and ameliorating the conditions that cause or favor the presence of invasive species. Prevention is not limited to prevention of the *introduction* of invasive species.
Restoration	Restoring and maintaining ecological integrity.
Standards	Standards are limitations placed on management activities to ensure compliance with applicable laws and regulations or to limit the discretion authority in project decision-making. Standards are limited to those actions that are within the authority and ability of the agency to meet or enforce. Compliance with relevant standards is mandatory.
Wildlands-Urban Interface	A 20 - 60 meter (66-200 feet) intensive treatment zone that may include public and private lands where fires most directly threaten structures and human life. Defensible space should be created within an additional

intensive treatment zone up to 1/8 mile, which includes the 60 meter homesite treatment zone, for fire fighter safety. Depending on site-specific circumstances (e.g. slope, vegetation, prevailing winds), an "extensive" treatment zone may be justified up to1/8 mile. Actions that are within the authority and ability of the agency to meet or enforce.

CHAPTER 3
PREVENTION, CONSERVATION, AND RESTORATION: ASSESSMENT AND ACTIVITIES

GOAL

Vegetation treatments are based on assessments of the condition of vegetation; major human causes of degraded conditions of the vegetation; opportunities for prevention of conditions favoring soil disturbance and vegetation problems; opportunities for conservation of native vegetation; likelihood for success of options for restoration; and results of past restoration activities.

Objective

The BLM will "not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species" (Executive Order 13112).

Objective

Prepare a landscape (ecoregion) restoration assessment of BLM holdings in the sixteen western states.

Standard

Map within the ecoregion:

1. key areas of high ecosystem integrity and native vegetation; areas of mixed native and exotic vegetation and condition; and areas of low integrity
2. habitat conditions for habitat-obligate terrestrial and aquatic wildlife species
3. habitat of wide-ranging species (e.g., bull trout and sage grouse) that require use of extensive or temporally diverse (e.g., winter/summer habitat) areas within the ecoregion
4. hotspots of plant and wildlife biodiversity
5. habitats “at risk” of further fragmentation or degradation
6. areas where restoration will increase potential for habitat connectivity
7. areas that could benefit from improved management or restoration to maintain or enhance ecological integrity.

Standard

Identify within the ecoregion the spatial and temporal association of particular vegetation problems with the spatial and temporal occurrence of past and continuing human activities.

Objective

Prior to implementing site-specific restoration activities, prepare watershed and subwatershed goals based on assessment of watershed and subwatershed:

1. vegetation conditions
2. vulnerable wildlife and plant species and habitats within the watershed and subwatersheds
3. habitat important for threatened, endangered, and sensitive species and carnivores; connectivity for habitat-obligate wildlife

4. major past and present activities within the watershed leading to vegetation problems
5. restoration needs, both for passive and active restoration
6. feasible restoration goals.

Standard

Using existing data initially, prepare a map of invasive exotic species concentrations within each watershed and subwatershed. Identify and prioritize through existing data all significant information gaps. Improve and update the map every two years.

Standard

Prepare a map of exotic species plantings on BLM lands, and, when available, adjacent private and public lands.

Guideline

Offer simple invasive exotic species identification/reporting forms to BLM lands visitors in order to encourage the reporting of locations in which particular invasive species are present.

Objective

Maintain at a central site for the 16 western states an analysis of the conditions and activities that prevent, minimize, or reverse (as well as facilitate) the introduction, establishment, spread, and reinvasion of specific invasive exotic plant species (e.g., cheatgrass, ventanata, starthistle) throughout the 16 western states.

Standard

Incorporate findings of the analysis in all sites-specific activity planning.

Standard

Conservation will prioritize protection of:

1. areas of high ecological integrity
2. areas of key ecological connectivity (e.g. wildlife corridors, intact forest)
3. rare, unique, and vulnerable habitats
4. habitats for threatened, endangered and sensitive species.
5. roadless areas

Objective

Prior to implementing a site-specific restoration activity:

1. candidly state the watershed goals served by the restoration project
2. identify and prioritize restoration activity options
3. identify the least intrusive/intensive methods that will effectively move the site toward ecological integrity.

Standard

Restoration activities will prioritize, as feasible, and based on scientific evidence of efficacy:

1. cessation of activities that have been demonstrated to impede natural recovery (i.e., passive restoration)
2. active restoration projects that incorporate passive restoration
3. active restoration to restore ecological integrity.

Standard

Restoration activities will utilize

1. A thoughtful, careful, and precautionary approach
2. Best available science and experiential and indigenous conservation and restoration knowledge where applicable
3. An adaptive and public process that regularly incorporates revisions from monitoring and evaluation
4. The least intrusive techniques available to restore ecological integrity
5. The least risky interventions that are likely to provide the greatest ecological benefit
6. Recovery plans for threatened and endangered species, or improvements on such plans
7. Prevention strategies to reduce the need for treatments, so that the number of acres treated annually declines over the life of the EIS.

Standard

Passive restoration may include:

1. Area and road and ORV route closures
2. Voluntary livestock permit retirement
3. Retirement of vacant livestock allotments
4. Livestock grazing exclosures (e.g., in aggressive weed infestations, uplands "at risk" of weed infestation, riparian areas, TES habitat, springs, wetlands)
5. Restrictions of logging activities.
6. Restrictions of oil and gas and mineral development, including allowing expired leases to remain expired.
7. Restrictions on other human activities.

Standard

Active restoration may include

1. Road and ORV route removal
2. Culvert removal
3. Prescribed burning
4. Fuels reduction/thinning in wildlands-urban interface areas
5. Invasive exotic species treatments
6. Fish and wildlife habitat rehabilitation
7. Reintroduction of extirpated species
8. Planting and care of native seeds and plants
9. Reintroduction of soil biota required by native species, when necessary

10. Reconnection of flood plains with streams
11. Restoration of well pads and associated roads after wells have been capped.
12. Other necessary activities based on priorities established in the ecological restoration assessment.

Standard

Herbicide treatments will be of lower priority than non-chemical treatments. They will be used only in conjunction with elimination or reduction of the conditions that have favored the presence of invasive species, and will be followed by restoration of the site that has been treated with herbicides (Prevention, Conservation and Restoration Note 1).

Objective

State for all site-specific restoration projects and activities:

1. measurable conservation and restoration objectives
2. specific indicators and measures for determining results
3. timelines for analysis of whether goals, objectives and standards have been met
4. decision making processes that will be used to respond to analysis of results.

Objective

Establish processes that provide incentives for prevention and restoration.

Standard

Establish annual awards to BLM employees and Districts for accomplishments such as:

1. successful restoration of native vegetation
2. establishment throughout a District of proportional efforts in prevention, treatment, and restoration
3. exemplary monitoring
4. significant involvement of NGOs, students, and other volunteers in conservation and restoration activities on BLM lands.

Standard

Eliminate funding based on acres treated the previous year without documented connections to (a) alteration of the conditions that favored the presence of the vegetation that was treated and (b) restoration programs to restore the treated site to native vegetation.

Standard

Develop and maintain a central web site featuring passive restoration, active restoration, and prevention, including:

1. scientific literature on restoration and prevention outcomes of relevance to BLM lands
2. BLM projects that have resulted in reestablishment of native vegetation, reintroduction of extirpated species, increase in sensitive species populations, reduction in acres needing vegetation treatment, reestablishment of natural fire regimes

3. successful BLM arrangements to alter activities that have facilitated the introduction, establishment and spread of invasive species.

Prevention, Conservation, and Restoration Notes

1. This standard is essential, as herbicides can have numerous adverse toxic effects on workers; nearby residents; beneficial soil organisms; native plant, aquatic, terrestrial and avian species; can simplify the vegetation community; and can render the treated site more vulnerable to return of invasive species. Herbicides alone do not address the conditions that favor the introduction, establishment and spread of invasive species, and yet they are often used as stand-alone technological "fixes."

CHAPTER 4
FIRE MANAGEMENT

GOAL

Natural fire regimes and native vegetation types will be restored.

Objective

Collect baseline data on natural fire regimes and plant and animal communities to use as a target for restoration activities.

Objective

Base fire management on the 1995 Wildland Fire Policy and current science. As required by the Fire Policy, create Fire Management Plans for every burnable acre.

Standard

Through an open process that fully includes the public and utilizes the best available science, develop Fire Management Plans that will:

1. allow certain remote wildland areas to burn under carefully prescribed conditions where ecological benefits would result
2. prescribe "Minimum Impact Suppression Tactics" where they would be most effective
3. prohibit aggressive soil-disturbing suppression methods (e.g. bulldozers in roadless areas, chemical retardants in riparian areas) where they would be damaging
4. determine ecological risks of fire – exotic species, population impacts - in all areas covered by plans, and carefully weigh benefits and risks as part of this process.

Standard

Based on Fire Management Plans, use fire suppression to protect:

1. areas of high ecological values that may be at risk from exotic species invasion following fire
2. areas where human life, developed property or irreplaceable ecological values or cultural resources (e.g. rare forest types or a manor portion of the population of an endangered species) are at stake
3. areas that should be protected until prescribed burning can reduce excess fuels.

Standard

Fire fighting will be prohibited on:

1. riparian reserves and steep slopes
2. areas where nearby natural fire barriers such as bodies of water or rocky ridges are likely to extinguish the fire
3. Wilderness Areas, Wilderness Study Areas, roadless areas/potential wilderness areas, Wild and Scenic Rivers, and Research Natural Areas, except when fire threatens to escape from these areas or permanently impair ecological or cultural values.

Standard

Minimize introduction of invasive species during fire suppression operations. Clean equipment of invasive species seeds before moving equipment off roads to build fire breaks.

Objective

Minimize disturbance to burned areas to allow natural recovery.

Standard

Burned areas (natural or prescribed) will be protected from livestock grazing for at least five years and until measurable recovery criteria are met.

Standard

Monitor all fire camps and helicopter spots for invasive species following fire.

Objective

Use prescribed fire where ecologically appropriate to restore natural fire regimes and native ecosystem function, and only in concert with a restoration assessment with clearly defined restoration objectives; and where invasive species will not be increased.

Standard

Consideration of the following will be documented prior to prescribed burns:

1. long-term damage to microbiotic crusts
2. soil erosion through wind and runoff events
3. long-term loss of nutrients from already nutrient-deficient landscapes
4. loss of native species
5. loss of special status species habitat
6. risk of spread of invasive species
7. the levels of nuclear testing radionuclides in the immediate and adjacent area of the proposed burns
8. interrelation between prescribed burning projects on adjacent Federal/state lands
9. indigenous uses of plants that may be impacted.
10. impacts on air quality.

Standard

Prescribed burning teams will:

1. use existing roads
2. limit ground disturbance
3. address risk of fire spreading beyond the project area and onto surrounding lands.

Objective

Educate the public about the natural role of fire and protecting their homes from fire through the Fire Wise Program.

CHAPTER 5
FUELS TREATMENT

GOAL

Human lives and property will be protected in the wildlands urban interface and natural processes will be restored.

Objective

Fuels reduction funds under the National Fire Plan will be used:

1. only in the wildlands urban interface (as defined in the Definitions chapter) to protect lives and property in the wildands-urban interface
2. for essential fire planning and preparedness to maximize the efficiency and effectiveness of fuels reduction

Objective

Protect lives and property in the wildlands-urban interface.

Standard

Distinguish between fuels treatments intended to restore ecological integrity and those primarily intended to protect property and human life.

Standard

Intensive wildlands-urban interface treatments (thinning, pruning, and mowing of vegetation, roof cleaning, and replacement of flammable landscape and building materials) must be undertaken within 20 - 60 meters (66-200 feet) of structures. Structures on public or private lands that are threatened by fire on BLM lands will be protected.

Standard

Defensible space should be created within an additional intensive treatment zone up to 1/8 mile, which includes the 60 meter homesite treatment zone, for fire fighter safety.

Standard

Depending on site-specific circumstances (e.g., slope, vegetation, prevailing winds), an "extensive" treatment zone may be justified, up to one-eighth mile.

Standard

Fuels treatment in the extensive zone will focus on light thinning and brush removal in preparation for prescribed burning, while maintaining habitat components for wildlife wherever possible, including retention of fire-resilient large trees and snags.

Standard

Long-term maintenance activities of the wildlands-urban interface (i.e., prescribed burning, mechanical brush removal, etc.) as well as monitoring plans will be considered and a funding commitment secured before any action is undertaken.

Guideline

Management of the wildlands-urban interface zone will be a cooperative partnership between the Federal government and private sector. Cooperation will extend from the initial assessment to long-term maintenance, encouraging appropriate access to structures for fire fighting as well as fire resistant landscaping and construction standards for all land ownerships.

Objective

Fuels reduction to restore natural fire processes will based on comprehensive restoration assessments with clearly defined objectives, in conjunction with other active or passive methods.

Standard

Restoration priorities will be identified through a restoration assessment before any restoration fuels reduction activities take place.

Standard

Fuels reduction will:

1. minimize or avoid road construction and reconstruction
2. avoid roadless areas, old growth, endangered species habitat, riparian areas, ecological sensitive areas and other areas of high ecological integrity
3. avoid habitat of threatened and endangered species.

Standard

Fuels reduction will not:

1. increase motorized vehicle use or livestock access
2. supply biomass plants
3. chip material and leave it on the ground which increases fire risk and limits native plant recovery
4. include chaining.

Objective

Use positive economic incentives that encourage ecologically based restoration activities and eliminate incentives that encourage activities that are ecologically degrading.

Standard

Contracting methods for fuels reduction/thinning for WUI or restoration will be based on economic incentives that encourage ecologically based restoration activities and will not include:

1) Commercial timber sales
2) "Goods for Services" Stewardship Contracts
3) other economic incentives that encourage activities which are ecologically degrading.

Standard

All fuel reduction projects will be paid for by appropriated dollars and any material of commercial value will be sold in a separate contract and all revenues will returned to the treasury.

Objective

Following fire, all standing trees will be left for wildlife habitat, soil stability, and nutrient cycling.

Standard

There will be no post-fire salvage logging except where necessary to maintain public safety.

CHAPTER 6
INVASIVE EXOTIC SPECIES

GOAL

The ecological impact of non-native invasive species will be minimized through conservation and restoration of native vegetation communities, watersheds and wildlife habitats.

Objective

Develop, with the input of knowledgeable scientists and citizens, a long-term (e.g., 100-year) plan for prevention and minimization of unwanted exotic vegetation within the planning area.

Standard

The long term vegetation management plan for integrated agency action will include:

1. identification and amelioration of the *conditions* that cause or favor the introduction, establishment, and spread of invasive species
2. protection of intact ecosystems from invasions
3. preservation of or restoration of the natural historical disturbance regime
4. restoration of the native vegetation community, via seeding and planting, to increase resistance to invasion
5. active vegetation treatments to reduce invasive exotic species populations.

Objective

Give priority to two facets of the control of invasive species as defined in Executive Order No. 13112, "Invasive Species":

1. Prevent the spread of invasive species from areas where they are present.
2. Restore native species and habitats to reduce the effects of invasive species and to prevent further invasions.

Objective

Prevent, wherever possible, the conditions that favor introduction, establishment, and spread of invasive species. Develop and implement comprehensive, science-based protocols designed to prevent the spread of invasive species in relation to all activities on BLM lands that have been identified in the scientific literature as primary facilitators of the establishment and spread of invasive species, watershed degradation, and loss of native species.

CONDITIONS THAT FAVOR INVASIVE SPECIES
1. LIVESTOCK GRAZING

Objective

Minimize the introduction, establishment, and spread of invasive species due to livestock grazing.

Standard

Reduce spread of invasive weeds caused by domestic livestock grazing.

1. retire domestic livestock grazing permits wherever possible to prevent the spread of weeds
2. prioritize vegetation restoration activities for areas where domestic livestock grazing has been permanently ended.
3. Manage livestock movement patterns to animals are not moving seeds of invasive species from infested to uninfested areas.
4. Manage livestock grazing to favor native species.

Standard

Conduct forage enhancement projects only if they incorporate ecological principles to encourage or promote only native species, and will not result in any net loss of native plant communities.

CONDITIONS THAT FAVOR INVASIVE SPECIES
2. ROADS AND ORVs

Objective

Minimize invasive species introduction, establishment and spread due to road and ORV route construction, maintenance, and use.

Standard

Develop detailed GIS map and database inventories depicting all system (authorized and constructed) and non-system (user-created) roads and routes.

Standard

Road or ORV route reconstruction, and any consideration of adding existing or illegal user-created roads and ORV routes to the transportation system, will be preceded by NEPA analyses of their impacts, including potential to facilitate the spread of invasive species into unaffected native ecosystems.

Standard

Limit motorized vehicle travel to designated routes that minimize the spread of invasive species.

Standard

Implement measures that reduce the likelihood of weed seed dispersal, such as education of equipment operators, agency and contractor vehicle and equipment washing, recreational access restrictions, and seasonal restrictions to travel. Consider restricting road grading activities in areas with high populations of invasive species.

Standard

Implement full area closures that prohibit all motorized travel on lands outside of designated and NEPA analyzed transportation system roads and ORV routes.

Standard

Close or restrict motorized use of all non-essential system roads and ORV routes that are shown during weed management planning NEPA analysis to facilitate the spread of invasive species.

Standard

Identify and designate for obliteration system and non-system roads and ORV routes that do not comply with native vegetation protection goals.

Standard

Reclaim obliterated roads to native vegetation.

Standard

Utilize low-impact fire line construction methods and fully reclaim fire lines with native vegetation after fire emergency situations have ended, in order to prevent the spread of invasive species into the disturbed fire line corridors and to prevent the use of fire line corridors as illegal ORV travelways.

CONDITIONS THAT FAVOR INVASIVE SPECIES
3. COMMERCIAL LOGGING

Objective

Minimize the introduction, establishment, and spread of invasive species due to timber sales.

Standard

Maintain old-growth vegetation communities as bulwarks of vegetational resistance to invasion; minimize disturbance of old-growth or late seral vegetation communities. Whenever possible, maintain intact forest canopies adjacent to areas where invasive species are abundant.

Standard

Design and plan timber sales to prevent introduction, spread, and establishment of invasive species, including pathogens.

CONDITIONS THAT FAVOR INVASIVE SPECIES
4. ALTERED HYDROLOGICAL FLOW REGIMES

Objective

Minimize the introduction, establishment, and spread of invasive species due to altered flow regimes of rivers and streams.

Standard

Prioritize treatments of riparian areas where restoration is likely to be successful; i.e., areas where the natural historic flow regime is extant.

Standard

Restore native historical flow regimes whenever it is possible to do so.

CONDITIONS THAT FAVOR INVASIVE SPECIES
5. USE OF EXOTIC SPECIES FOR REVEGETATION, FORAGE IMPROVEMENT, EROSION CONTROL, LANDSCAPING

Objective

Prohibit planting of exotic species.

Standard

Exotic species will not be utilized for restoration, habitat improvement, range improvement, or landscaping.

Standard

Collaborate with federal, state, local and private land managers to reduce sale and planting of exotic invasive species.

Standard

Include all invasive exotic species in weed education programs. Also include information about how these species are introduced to public lands.

Standard

Following fire or other disturbances, reseeding will not be proposed unless it can be shown that natural regeneration is not likely. If analysis shows that reseeding is necessary, native species will be used unless they are not available. Certified weed-free seed will always be used.

CONDITIONS THAT FAVOR INVASIVE SPECIES
6. OIL, GAS, AND MINERAL EXPLORATION AND DEVELOPMENT

Objective

Minimize the introduction, establishment, and spread of invasive species due to oil, gas, and mineral exploration and development.

Objective

Prohibit seismic exploration activities in sensitive species habitat, on biological crusts, on steep slopes, in areas with special status plant species, and on sensitive soils.

Standard

In areas where seismic exploaration activities are permitted best available technologies must be used (i.e. helicopter shot-hole technologies over the use of 65,000 pound thumper trucks.

Standard

In areas where thumper trucks are permitted, require signed area motorized closures and full reclamation of seismic survey corridors, in order to prevent the use of such corridors as access avenues for illegal motorized access.

Objective

Locate wells and associated roads and pipelines to avoid or minimize surface disturbance, including a prohibition of surface disturbing activities on slopes greater than 25%.

Standard

Keep removal and disturbance of vegetation to a minimum through construction site management (e.g. using previously disturbed areas and existing easements, limiting equipment/materials storage and staging area sites etc.) on both individual well locations and within oil and gas project areas.

Standard

Vehicles, equipment, and machinery entering an oil and gas project area must receive a power wash prior to entering.

Standard

Limit vehicular traffic to the running surface of roads and well locations as authorized in Application's for Permit to Drill (APD's) and Right of Ways (ROWs) thus prohibiting all traffic on two-tracks and trails near oil and gas well location and within oil and gas project areas.

Standard

Require that all gravel and other surfacing materials used for the project are free of noxious weeds.

Standard

Approval of ADP must be contingent on the use of best available technologies and be consistent with the Standard Lease Term No. 6; (Lessee shall conduct operations in a manner that minimizes adverse impacts to the land, biological, visual, and other resources.); BLM Instruction Memorandum 92-67.

Standard

Require the submission of an annual monitor plan and removal of invasive species at or near any and all locations disturbed by oil and gas activities before granting approval of an APD.

Standard

Prioritize non-chemical removal over chemical methods whenever possible.

Standard

Complete a survey for any and all endangered, threatened, candidate, sensitive, or rare plant species prior to allowing any surface-disturbing activities involved with oil and gas exploration, development, and production activities.

Standard

Prohibit oil and gas exploration, development, and production activities in areas with endangered, threatened, candidate, sensitive, or rare plant species

Objective

Adopt a "No Net Loss" policy for all special status plant species.

Standard

Restrict herbicide applications requiring that applications be kept at least 500 feet from known populations or individual endangered, threatened, candidate, sensitive, or rare plant species.

Objective

Conduct comprehensive baseline soil surveys prior to authorizing seismic exploration and/or oil and gas development and production activities.

Standard

Prohibit oil and gas exploration, development, and production activities in areas with sensitive soils.

Objective

Each operator must submit a Surface Use Plan containing appropriate erosion control and revegetation measures with each APD request.

Objective

Grading and landscaping will be used during and after construction activities are completed to minimize slopes and water bars installed on disturbed slopes in areas with unstable soils where seeding alone may not adequately control erosion.

Standard

When completing authorized surface-disturbing activities salvage, adequately protect the integrity of, and subsequently replace the topsoil whenever possible.

Standard

Upon the completion of the drilling phase require immediate reclamation of well pads using the soils originally removed during construction, of all portions of the pad that can be reclaimed.

Objective

With each APD request the oil and gas operators must submit a Reclamation Plan that includes, but shall not be limited to:

1. identification of lands to be disturbed
2. detailed description of the baseline condition and resources on the land including existing uses, soil characteristics, topography, vegetative cover, productivity
3. methods to control erosion
4. plans to revegetate and restore the areas disturbed
5. addresses steep slopes, sensitive soils, recontouring requirements, short-term seedbed preparation measures, seeding mixtures and methods, and long-term objectives
6. steps to be taken to comply with federal, state, and local environmental laws, regulations, and policies.

PRESERVATION AND PROTECTION OF BIOLOGICAL SOIL CRUSTS

Objective

Maintain biological soil crusts as a partial shield preventing establishment or spread of invasive exotic species (See Exotic Species Note 1).

Standard

Map and describe the presence and degradation of biological soil crusts at the ecoregion, watersheds, and subwatershed levels within the 16 western states.

Objective

Prepare and implement a recovery plan for damaged biological soil crusts.

Standard

Monitoring the condition of biological soil crusts in grassland and forest areas which have experienced various degrees of livestock and other disturbances, and in areas slated for recovery efforts.

Standard

Prohibit livestock grazing for at least five years following a fire. Return of livestock may be delayed past three years if significant recovery of the biological soil crust has not occurred.

OBJECTIVES AND STANDARDS RELATIVE TO TREATMENTS

Objective

Priority for treatment will be given to exotic plant invasions that have adverse ecological impacts to native plant communities, watersheds, and wildlife habitats. Treatments will be part of an over-all ecologically based restoration plan and may include:

1. Biological control
2. Cultural practices
3. Mechanical treatments
4. Chemical treatments

Standard

Use biological control agents that have been approved and do not pose a threat to native species.

Standard

Use cultural methods of weed management that have been identified as effective in restoring native vetetation in current scientific literature (e.g., use of properly timed fire, properly timed and managed goat grazing, mulching, hand pulling) and conduct operational research to develop new, effective cultural treatments.

Standard

Plant and seed appropriate native species to compete with exotic species.

Standard

Use mechanical methods of weed management that have been identified as effective in restoring native vegetation in current scientific literature (e.g., mowing, spot fire (flamer), mastication, weed eaters, mulching, weed wrenches) and conduct operational research to develop new, effective mechanical treatments.

Standard

Chemical treatments will use application methods that minimize exposure to people, wildlife, and native plants. Spot treatment methods will be preferred over broadcast methods.

Standard

Treatments that restore natural processes and naturally occurring biotic communities (based on previous experiments or operational use) are preferred over treatments without this kind of documentation.

Standard

Nonchemical methods, unless shown to be ineffective, are preferred over chemical methods.

Standard

Treatments of small, incipient infestations have priority over treatment of large-scale infestations. Use seasonal employees to detect and treat small infestations.

Standard

Treatments will be appropriate to size of the proposed treatment area, its location, and the biology of the target invasive species.

Objective

Only herbicides that minimize adverse effects on environmental and human health, based on knowledge of all ingredients in the formulation, will be utilized for chemical control.

Standard

Select treatment areas based on ecological priorities for restoration rather than potential economic benefits.

Standard

Sulfonylurea herbicides and other acetolactate synthase-inhibiting herbicides will not be used due to their demonstrated ability to damage off-site native and crop species.

Objective

Treatments within wilderness areas will be in compliance with the Wilderness Act.

Standard

Except for treatment of small infestations without motorized equipment, prescribe treatments within designated wilderness or wilderness study areas only after the spread of invasive species from outside these areas has been effectively halted.

Standard

Any proposal that contemplates the use of motorized or mechanized actions within wilderness shall include a "minimum requirements analysis" as defined in section 4(c) of the Wilderness Act.

Guideline

Adopt the Carhart Model (Arthur Carhart National Wilderness Training Center) for completing minimum requirement analyses and minimum tool analysis. The model assists managers in making decisions about their administrative decisions in wilderness. In addition to the minimum requirements analysis, it includes an analysis to determine which of available treatments will have minimum impact.

OBJECTIVES AND STANDARDS FOR REVEGETATION

Objective

In revegetation efforts, whenever it is possible to do so, use native seed and seedlings that have been grown from seeds of plants closest to the habitat being revegetated.

Standard

Use non-natives only in extremely degraded/severely altered systems as an intermediate step toward/placeholder for native restoration, accompanied by a full commitment to complete restoration of native species. This commitment must be included in the governing NEPA analysis FONSI/ROD and funds set aside as part of the project, with specific deadlines for accomplishment.

Standard

If native seeds/plants are not available, revegetation projects will rarely be undertaken until native plant seed or plants become available.

Standard

When reseeding with non-native species, certification will have to be provided that only species that have been documented as non-persistent are present in the seeding mixture.

Standard

Assure availability of native seed and plants:

1. establish BLM contracting systems that will provide growers the necessary assurance their seed/plants will be purchased if grown
2. establish sufficient storage facilities for native seeds for major revegetation efforts.

Objective

Determine, in landscape, watershed, and subwatershed vegetation assessments, the feasibility of providing habitat for wildlife and plant species that have been extirpated or nearly extirpated on BLM lands.

Standard

Prepare a public report on potential reintroduction of extirpated species, including foreseeable human activities or developments that would foreclose options for such reintroductions.

Invasive Exotic Species Notes

1. These crusts of lower plants and cyanobacteria cover soil surfaces between individual plants in healthy arid grasslands, shrublands, and dry woodlands. While they fix nitrogen, increase soil fertility, improve water infiltration, stabilize soils, and enhance the establishment of vascular plants, they also may provide a shield that reduces or prevents establishment and spread of exotic species. Biological soil crusts are particularly susceptible to damage from physical disturbance.

CHAPTER 7
WATERSHED, AQUATIC AND RIPARIAN RESTORATION

GOAL

Watersheds are maintained and restored to provide native ecosystem structure and function. The health, diversity, and resiliency of aquatic ecosystems are restored (see Watershed Note 1).

Objective

Establish general aquatic conservation objectives that will serve as both goals and sideboards for all site-specific vegetation restoration activities and programs.

Standard

Vegetation restoration activities shall contribute demonstrably to attainment of the aquatic conservation objectives

Objective

Conserve remaining native vegetation, aquatic species, and native community strongholds.

Objective

Recover threatened, endangered, and sensitive aquatic and riparian-dependent species.

Objective

Restore depressed native aquatic species and restore connectivity in watersheds where populations of native aquatic species are presently fragmented because of native habitat degradation, loss or disruption.

Objective

Restore watershed, stream channel, water quality, riparian integrity and soil productivity where native riparian vegetation, natural watershed function and condition have been degraded.

Objective

Identify and protect sensitive soil and water resources through the completion of soil surveys and slope stability assessments.

Objective

Map and protect important aquatic areas, such as riparian areas, steep/unstable slopes, wet meadows, and aquatic species' strongholds.

Standard

Overlay these maps with:

1. A grazing allotment assessment with the goal of phasing out grazing in sensitive areas over time. These include degraded areas, key habitats, and areas where grazing is clearly incompatible with native vegetation and habitat recovery.

2. A logging assessment with the goal of ceasing logging in areas where there is a high risk that it will thwart the recovery of native vegetation or increase existing levels of degradation.
3. A roads and ORV routes assessment with the goal of closing and decommissioning roads and ORV routes in ecologically sensitive areas including riparian areas, unstable slopes, sensitive watersheds, and wildlife migration corridors (see Watershed Note 2).
4. An amphibian assessment. Avoid herbicide use in amphibian habitats, as many amphibians are highly vulnerable to herbicide applications and drift.

Standard

Identify riparian conservation areas, consisting of the riparian community and hydrological energy zones; and an outer zone that takes into consideration the need to buffer the riparian conservation area as well as slope stability and soil erodibility factors.

Standard

Prohibit land disturbing activities in the riparian conservation areas. Exceptions are the removal of timber to protect human health and safety.

Standard

Avoid application of herbicides where possible in riparian conservation areas; prohibit broadcast spraying in riparian conservation areas. Avoid application of herbicides (e.g. atrazine) with documented adverse effects on fish, amphibians, and other aquatic species.

Standard

Suspend livestock grazing on non-cohesive soils in perennially saturated meadows.

Standard

Cease new road construction and most road reconstruction in order to avoid proliferation of invasive species in riparian areas.

Standard [for active restoration]

Active restoration will avoid in-stream channel manipulations except those of an emergency nature required to establish connectivity between the riparian and riverine environments, or those of a research-based nature.

Objective

Monitor progress toward attainment of long term health and integrity of the watershed, aquatic, riparian, native vegetation and soil resources.

<u>Watershed Notes</u>

1. The three most common activities on public lands managed by the BLM that continue to contribute to declining watershed health are:

- *Livestock grazing*, which has caused severe, widespread, long-lasting damage to soils, vegetation, riparian areas, streams, and associated species;

- *Roads,* which damage water quality, riparian areas, the quantity and timing of water flows, aquatic and riparian flora and fauna, and the overall hydrologic and ecological functions of watersheds; and
- *Logging,* which has contributed to degradation of water quality, riparian areas, soils, vegetation, and aquatic resources.

These activities lead to elevated sedimentation, degraded soils, degraded riparian areas, and altered stream flows within much of the BLM-managed landscape. Fire in watersheds, a natural process, plays a far smaller role in watershed degradation than these activities.

2. Scientific literature indicates that the cumulative negative impacts of roads, logging, and livestock grazing far surpass fire as the major sources of watershed degradation.

CHAPTER 8
WILDLIFE HABITAT

GOAL

Native biodiversity and wildlife habitat are protected and enhanced. Threatened, endangered, candidate and sensitive species populations are enhanced. Wildlife populations are broadly distributed across the landscape with population interaction occurring, maintaining population viablity and long-term evolutionary potential. All native wildlife and plant species receive the benefit of doubt regarding evidence of harmful impacts, even if cause and effect have not been conclusively proved. Degraded and fragmented habitats are being restored.

Objective

Prepare a broadscale assessment of habitat types based on vegetation communities, and assess conditions for habitat-obligate terrestrial wildlife species within these vegetation communities in the sixteen western states (See Prevention, Conservation and Restoration Assessment Objectives and Standards.)

Standard

For habitat-obligate species or other species of concern, identify critical habitat features, and design treatment to protect or enhance these features to extent possible.

Standard

Consult conservation center databases and other sources of information and scientists on species occurrence – absence of data may simply mean no reliable inventories have been conducted in the past.

Standard

Identify the least intrusive/extensive/risky methods to enhance wildlife habitat and populations.

Standard

Shape specific treatments to account for wildlife habitat needs, for instance, by the timing and location of activities. Avoid treatments during nesting season for migratory birds, and during identified sensitive periods for wildlife (e.g., critical wintering habitat for big game or sage grouse).

Standard

Assess cumulative effects of management activities, human disturbance activities or natural disturbance processes that impact wildlife habitats and populations in relation to disturbances associated with proposed treatment.

Standard

Conduct effects of site-specific treatments on an array of species; reliance on assessments of effects only on umbrella species is not sufficient (see Wildlife Habitat Note 1)

Standard

Minimize disturbance from treatment to other species. Avoid treatments that could reduce scarce or poorly distributed habitats.

Standard

Restore areas invaded or converted/seeded with non-native species where beneficial for wildlife populations of concern.

Guideline

Avoid activities that fragment blocks of intact habitat.

Wildlife Habitat Notes

1. An example of the insufficiency of analysis for effects solely on an umbrella species involves sagebrush canopy "thinning" for sage grouse. This may negatively impact nesting cover for migratory bird species of concern.

CHAPTER 9
MONITORING AND RESPONSE TO MONITORING

GOAL

Before resources are committed to modify a plant community, baseline data will be gathered to reflect existing conditions. If treatments are initiated, data will be collected to substantiate whether or not any of the goals, objectives, and standards have been met. If baseline and post-treatment evaluation monies are not available, then the project will not be approved (see Monitoring Note 1).

Objective

Monitoring will be used to:

1. Inventory baseline conditions at the landscape, watershed, subwatershed, and project site levels
2. Measure whether positive goals for native ecosystem recovery, conservation, and integrity are being attained
3. Track biodiversity and health using an increaser/decreaser species procedure (including biological soil crusts, wildlife, and endemic/sensitive species).
4. Practice precaution, retain flexibility, and respond to change, unforeseen harm, failure to reach objectives, and/or new information
5. Quantify invasive species population changes

Standard

Monitoring and evaluation of conservation and restoration activities will:

1. Relate to the clearly stated objectives of all restoration projects
2. Be an integral component of each restoration project
3. Be incorporated into the essential costs of each project
4. Use scientific principles of experimental design including replication and measurements from untreated control areas for comparison with treated locations
5. Use a process responsive to all-party and scientific input
6. Encourage involvement of local, regional and national stakeholders
7. Be documented in a sixteen-state central database with assessments, objectives, monitoring procedures, and analyses in comparable formats
8. Outline clear procedures for responding to monitoring and evaluation results and new information.

Standard

Monitoring methods will be:

1. Relevant: evaluates progress toward stated objectives
2. Sensitive: quickly detects change, shows trends, identifies critical features
3. Available: inexpensive, easily applied
4. Measurable: accurately quantifiable with acceptable methods
5. Defensible: minimally subject to individual bias
6. Verifiable: allows others applying the same methods to achieve similar results
7. Inclusive: avoids reductionism, where feasible
8. Scheduled: monitoring interval firmly scheduled.

Objective

Goals, objectives, standards, and guidelines will be written for all projects tiered to this EIS. All projects will be monitored to determine if their goals, objections, standards, and guidelines are being met on schedule.

Standard

All goals, objectives, and standards and guidelines will be written in such a manner as to be measurable with concrete ecosystem indicators. Reliance on "professional judgment" without evidence will be minimized, so that conclusions and ecosystem conditions can be independently verified.

Standard

Each District will prepare an annual monitoring report of all vegetation restoration projects (passive and active). These reports will be available at a central BLM location within the 16 western states (Monitoring Note 2).

Standard

Annually report whether goals, objectives, standards and guidelines are being met or not. For those that are not being met, indicate plans for meeting them or of altering the conditions and/or activities that are not providing for their attainment.

Standard

All proposals to permit or undertake a vegetation restoration activity will include a description of the monitoring that will be necessary to determine the compatibility of the activity with specific goals, objectives, standards and guidelines.

Monitoring Notes

1. There is an obvious, admitted, ongoing, and institutional failure to adequately monitor, survey, and document the impacts of human activities on habitats, native vegetation, and native wildlife on federal public lands. Even when monitoring has occurred, land managers have rarely translated the findings into management improvements. Good intentions and monitoring plans have been insufficient to direct sufficient funding, staff, or attention to the outcomes of vegetation and other restoration treatments, among other human activities. It is essential that both the continuation and initiation of vegetation restoration activities be dependent upon prior adequate baseline and post-treatment monitoring. “We do what we get funded for" is neither a legally sufficient nor an ecologically responsible approach to the required, continuous, finding of compatibility of treatment activities with the goals, objectives, standards, and guidelines of this EIS.

2. Monitoring needs to be documented so that it can be independently reviewed by non-BLM scientists, the scientifically literate public, and others who are concerned about the ecological health of the nation’s federal, public lands.

CHAPTER TEN
TRIBAL RELATIONS

GOAL

Native American Indian concerns and issues relative to vegetation management in the planning area are addressed and mitigated in full collaboration with Native Tribal people.

Standard

Consultation and collaboration with Native Tribes will take place throughout the process of developing and implementing this EIS in accordance with Executive Order No. 13084, Consultation and Coordination with Indian Tribal Governments.

Standard

Native Tribal representatives from Tribal governments and organizations will be contacted when vegetation management proposals are proposed. Particular attention will be given to consultation and collaboration with local Tribal people when activities are planned that may affect Native cultural resources, hunting, fishing and gathering areas, sacred sites, or Tribal trust lands.

Objective

Vegetation management proposals will be analyzed with respect to environmental justice concerns pursuant to the requirements of Executive Order No. 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Standard

In collaboration with Tribal people, identify culturally significant plants used for food, basketweaving and other fibers, medicine, and ceremonial purposes.

Standard

Develop protocols for enhancement and protection of culturally significant plants used for food, basketweaving and other fibers, medicine, and ceremonial purposes, which include the following:

1. Utilize traditional indigenous knowledge and wisdom to protect and enhance native vegetation communities, native resources, and ecosystems.
2. Prioritize vegetation management proposals that will enhance and preserve culturally significant plants and animals.
3. Use minimal impact vegetation treatments where culturally significant species are known to occur. Vegetation treatments will not result in net loss of native species of importance to indigenous people for subsistence or cultural purposes.

Standard

Establish herbicide-free zones to protect culturally significant plant and wildlife resources from contamination with herbicides.

Standard

Provide full disclosure and notification of herbicide spraying proposals to Indian communities. Provide notification of the exact locations, dates, and times that herbicide applications will take place to Indian communities via letters of notification and posting in prominent locations (such as community bulletin boards and local post offices).

Standard

Develop monitoring protocols to assess the impacts of different vegetation management approaches upon the viability and health of culturally significant plants and animals. Adapt management plans as necessary to ensure culturally significant plant and animal resources are protected for seven generations.